

POWER ENGINEERING TECHNOLOGY

Program: PETY

Credential: Ontario College Advanced Diploma, Co-op

Delivery: Full-time

Work Integrated Learning: 1 Co-op Work Term + 1 Field Placement

Length: 5 Semesters, plus 1 work term

Duration: 2 Years

Effective: Fall 2023

Location: Owen Sound

Description

Students develop the skills and knowledge to operate high-energy processes found in power plants such as steam production and use, refrigeration, and gas compression. These processes are found in many industrial, commercial and institutional facilities to support manufacturing, food production, and electrical power generation, as well as to heat and cool buildings. Students learn to operate and maintain equipment such as high-pressure steam systems, boilers, turbines, compressors, chillers, pumps and condensers. In order to ensure power plant processes are operated safely and efficiently, students acquire strong foundation in equipment theory and the underlying science that explains how these machines work. Additionally, students benefit from experiential learning in an on-campus Technical Standards and Safety Authority (TSSA) registered power plant, a power plant simulator, and through co-op learning experiences.

The program follows the Standardization of Power Engineer Examination Committee (SOPEEC) 4th and 3rd class syllabus and prepares students to write TSSA examinations required for both the 4th and 3rd Class Power (Operating) Engineer certifications.

Career Opportunities

Graduates of this program may find rewarding careers as power or operating engineers in a wide variety of industries. Graduates may work at electrical power generating plants, as well as heating and cooling plants, schools, hospitals and other commercial buildings. Manufacturing, food processing and natural resources are areas in which students may find employment.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. work in accordance with occupational safety procedures to minimize risk and enhance personal and public safety;
2. evaluate and solve complex technical problems related to power engineering technology and plant systems by applying the principles of mathematics and science;
3. perform tasks related to power engineering and plant administration in accordance with relevant laws, policies, ethical principles, procedures and industry standards;
4. Communicate information effectively and accurately by evaluating, translating and interpreting relevant drawings and other related documents;
5. apply principles of operation for process equipment and electrical systems including boilers, prime movers, refrigeration systems, and associated auxiliaries to ensure safety and efficiency;
6. implement strategies that mitigate the effects of power generation on the environment;
7. utilize instrument and control systems to support the safe and efficient operations of a power plant;
8. outline accepted standards and practices of metallurgy, welding and testing of metals for quality control inspections in power plant operations;
9. manage power plant operations, equipment and personnel in a simulated power plant environment;
10. relate effectively to co-workers, subordinates and supervisors in the work environment;
11. apply basic entrepreneurial strategies to identify and respond to new opportunities.

Practical Experience

All co-operative education programs at Georgian contain mandatory work term experiences aligned with program learning outcomes. Co-op work terms are designed to integrate academic learning with work experience, supporting the development of industry specific competencies and employability skills.

Georgian College holds membership with, and endeavours to follow, the co-operative education guidelines set out by the Co-operative Education and Work Integrated Learning Canada (CEWIL) and Experiential and Work-Integrated Ontario (EWO) as supported by the Ministry of Colleges and Universities.

Co-op is facilitated as a supported, competitive job search process. Students are required to complete a Co-op and Career Preparation course scheduled prior to their first co-op work term. Students engage in an active co-op job search that includes applying to positions posted by Co-op Consultants, and personal networking. Co-op work terms are scheduled according to a formal sequence that alternates academic and co-op semesters as shown in the program progression below.

Programs may have additional requirements such as a valid driver's license, strong communication skills, industry specific certifications, and ability to travel. Under exceptional circumstances, a student may be unable to complete the program progression as shown below. Please refer to Georgian College Academic Regulations for details.

International co-op work terms are supported and encouraged, when aligned with program requirements.

Further information on co-op services can be found at www.GeorgianCollege.ca/co-op (<https://www.georgiancollege.ca/co-op/>)

Program Progression

The following reflects the planned progression for full-time offerings of the program.

Fall Intake

- **Sem 1:** Fall 2023
- **Sem 2:** Winter 2024
- **Work Term 1:** Summer 2024
- **Sem 3:** Fall 2024

- **Sem 4:** Winter 2025
- **Sem 5:** Summer 2025

Articulation

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at <http://www.georgiancollege.ca/admissions/credit-transfer/>

Admission Requirements

OSSD or equivalent with

- Grade 12 English (C or U)
- Grade 12 Mathematics (C or U)
- And one of:
 - Grade 12 Physics (C or U)
 - Grade 12 Chemistry (C or U)
 - Grade 11 Chemistry (C or U)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: www.georgiancollege.ca/admissions/academic-regulations/ (<https://www.georgiancollege.ca/admissions/academic-regulations/>)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit for Prior Learning website for details: www.georgiancollege.ca/admissions/credit-transfer/ (<https://www.georgiancollege.ca/admissions/credit-transfer/>)

Graduation Requirements

32 Program Courses
 2 Communications Courses
 3 General Education Courses
 1 Field Placement
 1 Co-op Work Term

Graduation Eligibility

To graduate from this program, the passing weighted average for promotion through each semester, from year to year, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

Program Tracking

The following reflects the planned course sequence for full-time offerings of the Fall intake of the program. Where more than one intake is offered contact the program co-ordinator for the program tracking.

Semester 1	Hours
Program Courses	
CHEM 1010 Chemistry and the Environment	42

ELEC 1009	Electricity and Controls	70
PENG 1007	Introduction to Power Engineering	28
PENG 1012	Power Plant Fundamentals	56
PENG 1013	Power Plant Communications	28
PENG 1014	Power Plant Simulation 1	14
PENG 1015	Power Engineering Introductory Math and Sciences	70
WETC 1010	Welding Techniques	42
Hours		350

Semester 2		
Program Courses		
PENG 1006	Power Plant Operations	84
PENG 1011	Prime Movers and Engines	42
PENG 1016	Power Engineering Skills Lab 1	42
PENG 1017	Power Engineering Skills Lab 2	28
PENG 1018	Power Plant Simulation 2	14
HRAC 1001	Refrigeration and Air Conditioning	70
Communications Course		
Select 1 course from the communications list during registration.		42
General Education		
Select 1 course from the General Education list during registration		42
Hours		364

Semester 3		
Program Courses		
CHEM 2003	Advanced Chemistry and the Environment	42
MATH 2010	Power Engineering Mathematics	42
PENG 2010	Thermodynamics	42
PENG 2011	Fluid Mechanics	42
PENG 2012	Power Plant Simulation 3	14
PENG 2013	Advanced Power Plant Operations	84
PENG 2014	Power Engineering Skills Lab 3	42
Hours		308

Semester 4		
Program Courses		
ELEC 2026	Instrumentation and Control Systems	42
ELEC 2027	Power Engineering Electricity	42
MENG 2018	Applied Mechanics	42
PENG 2015	Project Management and Plant Administration	42
PENG 2016	Power Plant Technical Drawings	28
PENG 2017	Power Plant Auxiliary Equipment	42
Communications Course		
Select 1 course from the communications list during registration.		42
General Education Courses		
Select 1 course from the general education list during registration.		42
Hours		322

Semester 5		
Program Courses		
PENG 2018	Advanced Refrigeration and Air Conditioning	50
PENG 2019	Advanced Prime Movers and Engines	50
PENG 2020	Power Engineering Skills Lab 4	40
PENG 2021	Power Plant Simulation 4	20
TECR 3007	Power Engineering Technical Report	14
Field Placement		
PENG 3008	Power Engineering Work Integrated Learning	160
General Education		
Select 1 general education course from standard list (online - 14 weeks)		42
Hours		376
Total Hours		1720

Co-op Work Term		Hours
COOP 1030	Power Engineering Work Term (occurs after Semester 2)	560
Hours		560
Total Hours		560

Graduation Window

Students unable to adhere to the program duration of two years (as stated above) may take a maximum of four years to complete their credential. After this time, students must be re-admitted into the program, and follow the curriculum in place at the time of re-admission.

Disclaimer: *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.